

# **An Experimental Study of Emotional Responding in Women With Posttraumatic Stress Disorder Related to Interpersonal Violence<sup>1</sup>**

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Although posttraumatic stress disorder (PTSD) is defined by the experience of intense negative emotions and emotional numbing (American Psychiatric Association, 1994), empirical study of emotional responding in PTSD has been limited. This study examined emotional responding among women with and without PTSD to positive and negative film stimuli across self-reported experience, facial expression, and written expression. Consistent with previous findings, no evidence for generalized numbing was found. In general, women with PTSD exhibited higher levels of negative activation and expressed more negative emotion words to both positive and negative film stimuli, whereas no group differences emerged in facial expressivity. Results are interpreted within the context of the current literature on emotional deficits associated with PTSD.

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**KEY WORDS:** PTSD; emotional responding; facial expression.

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A functionalist theory of emotion posits that emotions are processes that establish, maintain or disrupt a relationship with the environment (Frijda, 1986), particularly in response to personally significant events (Campos, Mumme, Kermoian, & Campos, 1994). From this perspective, the purpose of emotion is to provide information about personally salient events so that appropriate action can be pursued. However, emotional responses can be-

come dysfunctional when they are applied beyond the contexts in which they are of use (Frijda, 2000) and negative attitudes about emotions can lead to efforts at suppression, which may produce paradoxical reactions (e.g., Gross & Levensen, 1997) that interfere with the natural function of emotion. Such disruptions in emotional responding may have a profound impact on interpersonal functioning (e.g., Butler et al., 2003).

A defining feature of posttraumatic stress disorder (PTSD) is disrupted emotional responding. Intense negative emotions, attempts to avoid emotional experiences, and emotional numbing are hallmark symptoms of PTSD (American Psychiatric Association [APA], 1994), and research documents that attempts to control the experience (Plumb, Orsillo, & Luterek, 2003) and expression (Roemer, Litz, Orsillo, & Wagner, 2001) of emotion is common among individuals with PTSD. Research aimed at understanding these complex symptoms is critical given their impact on interpersonal functioning (e.g., MacDonald, Chamberlain, Long, & Flett, 1999), the possibility that attitudes about emotional experience and

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expression may act as a predisposing or maintaining factor for PTSD following a traumatic events (Nightingale & Williams, 2000), and the importance of emotional engagement to successful PTSD treatment (Foa, Riggs, Massie, & Yarczower, 1995; Jaycox, Foa, & Morral, 1998). However, despite the assumed significance of these symptoms in the development and maintenance of PTSD, relatively few studies have fully investigated their scope.

To date, two experimental studies have examined emotional responding among male veterans with PTSD. Litz, Orsillo, Kaloupek, and Weathers (2000) found that veterans with and without PTSD responded similarly to positive and negative photographic stimuli under a neutral condition. However, following a trauma prime, veterans with PTSD displayed less facial electromyography (EMG) responding to positively valenced images than controls (although no differences in self-reported response were observed). Contrary to predictions, no differences emerged in response to negatively valenced images under the trauma prime, although potential group differences may have been obscured due to a ceiling effect for response to negative slides. In a similar study of emotional responding to photographic images (without a prime condition), Amdur, Larsen, and Liberzon (2000) found no significant overall differences in subjective or physiological responding between combat veterans with and without PTSD and nontraumatized controls, although there was some evidence of emotional numbing on one outcome measure within a subset of particularly evocative pictures.

Although these studies provide a foundation for investigating emotional responding among individuals with PTSD, some methodological issues limit the potential clinical utility of the findings. For example, given the demonstrated gender differences in emotionally expressivity (Brody & Hall, 2000; Kring & Gordon, 1998), similar research is needed using female samples. One pilot study using a small sample of women with and without PTSD (Wagner, Roemer, Orsillo, & Litz, 2003) found more negative valence and arousal to the negative slides and more arousal to the positive slides in a PTSD group, although no differences in facial expressivity were found. However, this work was preliminary and marked by some of the limitations of the studies conducted with men.

For instance, the potency and personal relevance of picture stimuli in comparison to emotional events encountered outside of the laboratory is unknown. Also, although facial EMG and psychophysiological responses are important indices of emotional functioning, to determine the impact of disruptions in emotional responding on the interpersonal functioning of individuals with PTSD, other

more ecologically valid measures of responding may be of interest. Finally, studies of emotional responding and PTSD to date have broadly conceptualized emotional stimuli as positive or negative; this dichotomizing has been criticized as potentially too imprecise a distinction for emotional assessment (Gross, John, & Richards, 2000). Research is needed to determine whether or not there are emotion-specific disruptions in emotional responding associated with PTSD.

The aim of this study was to examine the emotional responses of women with and without PTSD to film clips designed to elicit several specific emotions states: contentment, amusement, sadness, fear, and anger. Film clips were chosen as the stimulus materials given their demonstrated utility in eliciting emotional states (e.g., Gerrards-Hesse, Spies, & Hesse, 1994; Gross & Levensen, 1995), particularly with clinical samples (e.g., Kring, Kerr, Smith, & Neale, 1993; Kring & Neale, 1996; Rottenberg, Kasch, Gross, & Gotlib, 2002).

In the present study, we examined three dimensions of emotional responding: self-reported subjective response, observable facial expressivity, and written expression of emotion. Our goal was to examine whether or not women with PTSD would express diminished responding to positive stimuli and increased responding to negative stimuli relative to women without the disorder.

## Method

### *Participants*

Forty-four women participated in this study, 24 intended for the PTSD group and 20 intended for the no-PTSD comparison group. Participants were recruited with flyers posted throughout the Boston area. Two flyers were used: one that recruited for women who had experienced physical or sexual assault as children or adults and who were currently experiencing symptoms of PTSD, and one that specifically recruited for women without that history who considered themselves to be generally happy and well-adjusted. Participants were financially compensated for participating.

Individuals were eligible for the PTSD group if they reported a history of interpersonal trauma (defined as physical or sexual abuse or assault as a child or an adult) and were currently experiencing symptoms of PTSD. Individuals were eligible for the no PTSD group if they did not have an assault history, PTSD related to any other traumatic event, or a current diagnosis of major depressive disorder (MDD). Preliminary assessment of probable PTSD was conducted during an initial phone screening

and confirmed in a clinical interview (described below) at the time of participation.

Upon interview, six participants intended for the PTSD group did not meet full criteria. One participant intended for the comparison group did not engage in the experiment and two others met criteria for current MDD. Thus, the final sample consisted of 18 women with PTSD and 17 women without PTSD.

The final sample was primarily Caucasian (71.4%) and African American (20.0%), with a mean age of 35.43 years ( $SD = 14.21$ ). Over two-thirds of participants (68.6%) had at least some college education. There were no group differences in age, ethnicity, or level of education. Within the PTSD group, 47% reported their PTSD symptoms in response to a sexual assault, 29% in response to a physical assault, and 24% in response to both. The mean score on the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990) in the PTSD group was 67.89 ( $SD = 20.24$ ), which exceeds 65, the cutoff that has been shown to be a sensitive and specific indicator of PTSD among male Vietnam veterans (Weathers, Ruscio, & Keane, 1999). The mean frequency of emotional numbing symptoms (e.g., anhedonia, detachment, and restricted range of affect) in the PTSD group was 2.68 and the mean intensity of those symptoms was 2.27 suggesting a moderate level of distress.

### **Experimental Stimuli**

Stimuli were emotionally evocative film clips used in previous studies (Gross & Levenson, 1995; Kring et al., 1993; Kring & Gordon, 1998). Specifically, clips from *The Money Pit* (amusement; 4 min, 31 s), *The Champ* (sadness; 2 min, 44 s), *Cat's Eye* (fear; 1 min, 42 s), and *Cry Freedom* (anger; 2 min, 36 s), and a clip previously found to elicit contentment, which depicts waves breaking on a beach (1 min, 04 s, soundless; Gross & Levenson, 1995) were chosen. Films were presented on a 21-inch screen color television approximately 5-feet from the participant.

### **Procedure**

Participants were run individually in one experimental session. To prevent trauma priming, the experimental emotional assessment was conducted prior to the clinical interview. Experimental instructions were delivered via videotape to ensure standardization and consistency and to minimize experimental demand, the research assistant left the room while the participant viewed the films and completed the questionnaires.

The same procedure was followed for each of the five film clips. First, the participant viewed the film clip

while her facial expressions were videotaped. Next, she was asked to complete the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) as a measure of her emotional experience following each film clip. The PANAS is a 20-item self-report scale consisting of adjectives designed to assess subjective emotional experience along two factors, positive activation and negative activation (Watson, Wiese, Vaidya, & Tellegen, 1999). Each emotional adjective is rated on a 5-point Likert scale (1 = *very slightly or not at all*, 5 = *extremely*).

Next, the participant engaged in the emotional disclosure task, which required her to write for 5-min about her feelings in reaction to the film clip. She was instructed not to worry about spelling or grammar while she was writing and to try and express her thoughts and feelings as she would to another person. Finally, participants performed a neutral word search puzzle task for 5-min to minimize carry-over effects between films. Previous studies have used similar intervals to successfully minimize carry-over effects (e.g., Gross & Levenson, 1993; Luterek, Orsillo, Lundgren, Cargile, & Hestand, 1999; Luterek, Orsillo, & Marx, 2003).

All five film clips were presented to all participants in the same order (contentment, amusement, sadness, fear, anger). This approach was used to be consistent with previous studies that have successfully employed this method of presenting film clips as an alternative to counterbalancing (e.g., Kring et al., 1993; Kring, Smith, & Neale, 1994; Tomarken, Davidson, & Henriques, 1990) which is thought to obstruct a positive film clip's potential to elicit positive affect (Ekman, Davidson, & Friesen, 1990; Oltmanns & Gibbs, 1995).

After the participant completed the emotional responding task, a masters or doctoral level clinician conducted a diagnostic interview to confirm group membership. If the participant had indicated a history of physical or sexual assault during the phone screen, she was then interviewed for PTSD using the CAPS (Blake et al., 1990), with the assault experience as the reference event for PTSD symptoms. If the participant was intended for the control group, she was first screened using the Life Events Checklist, a checklist of potentially traumatizing events (PTE) that is included in the CAPS. If a PTE was identified, the participant was interviewed using the CAPS to determine if she met criteria for PTSD related to that event. Each participant was also interviewed to determine whether or not she met current criteria for MDD using the Major Depressive Disorder module of the Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-I Research Version; First, Spitzer, Gibbon, & Williams, 1996).

### *Coding Facial Expression*

Participants' facial expressivity of emotion during each film clip was assessed using the Facial Expression Coding System (FACES; Kring & Sloan, 1992). Using this system, expressions can be rated on their frequency, intensity, valence, and duration. However, in the current study we chose frequency as the prime index of emotional expressivity,<sup>7</sup> consistent with previous studies that have used this methodology (e.g., Kring & Gordan, 1998; Kring & Neale, 1996).

FACES coding was conducted by research assistants trained to reliability on the FACES, who were blind to the nature and hypotheses of the study as well as the group status of the participants. Videotapes of facial expressions were presented to raters in random order so that raters would not expect a specific sequence or valence of facial expressions. All tapes were coded by both raters. Intraclass correlation coefficients (ICCs) using a random-effects model were computed for the pair of raters following the recommendations of Shrout and Fleiss (1979). Taking this approach allows the correlations to be interpreted as an index of agreement rather than consistency (Shrout & Fleiss, 1979). ICCs for frequency of congruent facial expressions (i.e., positive expressions to the contentment and amusement films, negative expressions to the sadness, anger, and fear films) ranged from .67 (sadness) to .88 (anger), with 4/5 of the ratings greater than .80 and a mean of .82. ICCs for frequency of incongruent facial expressions ranged from .26 to .89 with a mean of .53. Similar to other studies that have used FACES (e.g., Kring & Neale, 1996), low correlations in this sample were primarily due to limited variability, particularly for incongruent expressions. For instance, 82% of the sample displayed zero positive expressions to the sadness film and 74% of the sample displayed zero positive expressions to the anger film. The lowest reliability rating in congruent expressions was for the sadness film to which approximately 1/3 of the sample exhibited no expressivity.

### *Coding Emotional Disclosure Task*

The writings from the emotional disclosure task were transcribed into computer text files and analyzed by the computerized text analysis program, Linguistic Inquiry and Word Count, Second Version (LIWC; Pennebaker &

Francis, 1999). The dependent variables for the current study were the percentages of positive (e.g., happy, joy, peaceful) and negative emotion words (e.g., sad, hate, hurt, guilty) expressed.

### **Results**

To determine the effect of group and film type on emotional responding, an ANOVA was conducted separately on each of the dependent variables. Effect sizes were also computed for each analysis. The mean scores on each of the dependent variables in response to each film clip by group are presented in Table 1.

### *Emotional Experience*

To examine the impact of viewing film clips on self-reported positive and negative activation in women with and without PTSD, the positive and negative activation subscales of the PANAS for each film clip were compared using repeated-measures ANOVAs. For the positive activation scale, there was a significant main effect for film,  $F(4, 112) = 5.50, p < .001, d = .16$ , with participants reporting less positive activation to the sadness clip compared to each of the others ( $p < .05$ ), but not for group,  $F(1, 28) = 2.33, p = .14, d = .08$ . A significant interaction between film and group emerged,  $F(4, 112) = 2.77, p < .05, d = .09$ , with women with PTSD expressing more positive activation on the PANAS in response to the films designed to elicit fear and anger compared to women without PTSD.

For the negative activation scale, there was a significant main effect for film,  $F(4, 112) = 25.45, p < .001, d = .48$ , and for group,  $F(1, 28) = 7.31, p < .05, d = .21$ , but no interaction,  $F(4, 112) = 0.29, p = .89, d = .01$ . Within the film main effect, participants expressed significantly more negative activation following the sadness, fear, and anger film clips compared to the amusement film, and more negative activation following the fear and anger films as compared to the contentment film, whereas the sadness and fear films had equivalent levels of negative activation ( $p < .05$ ). With respect to the group main effect, women with PTSD expressed more negative activation on the PANAS in response to all films than women without PTSD.

### *Written Expression of Emotion*

LIWC scores for the use of positive and negative emotion words written by participants after each film clip were compared using repeated-measures ANOVAs. For the LIWC positive emotion score, there was a significant

<sup>7</sup>Earlier studies using FACES created a composite score of emotional expressivity combining frequency, intensity, and duration (Kring et al., 1993). In the current study, separate analyses using the composite ratings yielded similar results to those using the frequency ratings.

Table 1. Mean Scores on Film Response Measures for Individuals With and Without PTSD<sup>a</sup>

Measure	Film 1 contentment <i>M</i> ( <i>SD</i> )	Film 2 amusement <i>M</i> ( <i>SD</i> )	Film 3 sadness <i>M</i> ( <i>SD</i> )	Film 4 fear <i>M</i> ( <i>SD</i> )	Film 5 anger <i>M</i> ( <i>SD</i> )
PANAS: PA					
PTSD ( <i>n</i> = 15)	27.73 (11.22)	24.58 (6.75)	20.07 (7.21)	24.80 (7.87)	26.60 (10.53)
No PTSD ( <i>n</i> = 15)	22.40 (7.34)	25.03 (6.26)	19.53 (4.22)	19.80 (5.25)	20.40 (4.79)
PANAS: NA					
PTSD ( <i>n</i> = 15)	16.47 (9.96)	20.14 (8.10)	23.53 (12.43)	23.53 (9.08)	31.53 (11.54)
No PTSD ( <i>n</i> = 15)	11.67 (2.61)	12.67 (3.86)	16.33 (5.26)	18.27 (5.99)	25.67 (7.32)
LIWC: Negative					
PTSD ( <i>n</i> = 18)	1.50 (1.35)	2.88 (1.56)	5.60 (2.96)	3.40 (2.05)	4.47 (2.26) <sup>b</sup>
No PTSD ( <i>n</i> = 17)	1.51 (1.25)	2.22 (1.59)	4.35 (1.67)	2.62 (1.30)	4.40 (2.86) <sup>b</sup>
LIWC: Positive					
PTSD ( <i>n</i> = 18)	6.49 (4.03)	6.49 (2.97)	2.93 (1.92)	2.81 (1.70)	3.39 (1.75)
No PTSD ( <i>n</i> = 17)	4.88 (2.52)	5.22 (2.29)	3.42 (1.91)	2.61 (1.89)	2.86 (1.69)
FACES: Congruent					
PTSD ( <i>n</i> = 18)	0.32 (0.68)	8.85 (8.0)	2.47 (2.91)	2.82 (2.78)	3.53 (4.11)
No PTSD ( <i>n</i> = 17)	0.12 (0.38)	11.5 (6.38)	1.38 (1.76)	3.12 (2.70)	2.62 (2.72)
FACES: Incongruent					
PTSD ( <i>n</i> = 18)	0.32 (0.85)	6.88 (7.00)	0.35 (0.75)	0.56 (1.13)	0.29 (0.56)
No PTSD ( <i>n</i> = 17)	0.29 (0.56)	4.76 (4.45)	0.15 (0.61)	0.47 (0.67)	0.26 (0.50)

Note. FACES = facial expression coding system composite score; LIWC = linguistic inquiry and word count scores, positive emotion and negative emotion subscales; PANAS = Positive and Negative Affect Schedule, Positive Activation and Negative Activation subscales.

<sup>a</sup>Sample sizes vary slightly by analysis due to missing data.

<sup>b</sup>Scores on the variable for negative emotion words on the Anger film were significantly skewed. This was corrected for analysis using a log transformation.

main effect for film,  $F(4, 132) = 16.47, p < .001, d = .33$ , but not for group,  $F(1, 33) = 1.99, p = .17, d = .06$ , or the interaction of film and group,  $F(4, 132) = 1.25, p = .30, d = .04$ . Within the film main effect, the levels of positive emotion words did not differ between the contentment and the amusement films, or among the sadness, fear, and anger films. However, as expected participants expressed more positive emotion words in the contentment and amusement films as compared with the sadness, fear, and anger films ( $p < .01$ ).

For the LIWC negative emotion score, there was a significant main effect for film,  $F(4, 132) = 35.99, p < .001, d = .52$  and group,  $F(1, 33) = 5.38, p < .05, d = .14$ , but the film by group interaction was not significant,  $F(4, 132) = 0.95, p = .44, d = .03$ . Within the film main effect, the levels of negative emotion words differed between all film clips ( $p < .01$ ), with the highest negative emotion scores for the sadness and anger films. Within the group main effect, the PTSD group used more negative emotion words in their writings than the control group for all films, except the contentment film.

### Facial Expression of Emotion

To test the impact of viewing film clips on facial expressiveness in women with and without PTSD, frequency ratings of facial expressivity (using FACES coding) during each film clip were compared using repeated-measures

ANOVA. For congruent expressivity (e.g., positive expressions to contentment and amusement films), the only significant effect was for film type,  $F(4, 128) = 37.24, p = .01, d = .54$ . There was no significant group main effect,  $F(1, 32) = .04, p = .85, d = .01$ , nor was there a significant film and group interaction,  $F(4, 128) = 1.45, p = .22, d = .04$ . Within the film main effect, all films differed significantly from one another ( $ps < .01$ ) with the exception of the fear and anger films. The greatest amount of expressivity was displayed in response to the amusement film. As expected, the least amount of expressivity was displayed during the contentment clip.

A similar pattern of findings emerged in the analysis of incongruent expressivity (e.g., positive expressions to the sadness film) in that the only significant effect was for film type,  $F(4, 128) = 30.33, p = .01, d = .49$  and the nonsignificant effects for group and the group by film interaction were associated with small effect sizes ( $d = .03$ ). Within the film main effect, the frequency of negative expressions to the amusement film was significantly higher than the incongruent expressions to all the other film clips.

### Discussion

The aim of this study was to extend the research that has been conducted to date by examining emotional

responding among women with PTSD using a more ecologically valid methodology demonstrated to be useful in exploring emotional responding in other clinical samples. Congruent with previous findings, there was no evidence in this study for a generalized numbing to emotional stimuli, although some unique patterns of emotional responding were evident within the PTSD group. In response to the amusement stimulus, women with PTSD reported experiencing more negative activation and expressed more negative emotion words than women without PTSD, whereas no group differences emerged on facial expressivity, self-reported positive activation or the written expression of positive emotion. In response to the sadness, fear, and anger film clips, women with PTSD expressed more negative emotion words than those without PTSD, although no differences in facial expressivity emerged. Further, women with PTSD reported higher levels of negative activation across all emotion-eliciting film stimuli. Taken together, these findings generally suggest that women with PTSD may experience and verbally express higher levels of negative emotion in reaction to a variety of emotionally evocative stimuli; however, these negative experiences are not discernable via facial expressivity.

One interesting finding from this study is that the PTSD group reported more positive activation in response to the films designed to elicit sadness, fear, and anger. Given that the positive activation dimension of the PANAS involves alertness and attentiveness in addition to pleasurable engagement, this finding most likely reflects the high arousal associated with exposure to negatively valenced emotionally evocative stimuli within the PTSD group. Previous research has demonstrated that women with PTSD respond to positive stimuli with increased arousal (Wagner et al., 2002). Further research into the emotional experience of individuals with PTSD should include psychophysiological measures of arousal to further explore this phenomenon.

Overall, experimental studies aimed at documenting the reported emotional numbing, or the inability of individuals with PTSD to experience positive emotions, have not revealed the compelling deficits that might be expected based on descriptive research and clinical experience. A possible explanation for this lack of strong and consistent findings is that research into positive emotions is in its infancy (Fredrickson, 2002). Definitions of positive emotions are often ambiguous and confusing. For instance, sometimes forms of sensory pleasure, such as sexual gratification or satiation of hunger or thirst are assumed to reflect positive emotions such that they share with positive emotions a pleasant subjective feel (Fredrickson, 1998). Also, fewer stimuli have been developed and established that reliably elicit positive emotion. For instance, although

film clips such as the one used in the current study elicit amusement (Gross & Levensen, 1995), it is more difficult to experimentally elicit positive emotions of more clinical relevance such as joy and love. Given the central importance of positive emotions to the quality of people's lives (Diener & Larsen, 1993; Myers & Diener, 1995), it is critical that research in this area not be further marginalized (Fredrickson, 1998).

Another possible explanation for the lack of experimental support for emotional numbing among individual with PTSD may reflect the ways in which this construct has been operationally defined (diminished ability to experience positive emotions) in these studies. One particularly compelling finding from this study is that women with PTSD responded with both intense positive and negative emotions to stimuli designed to elicit amusement. It may be that the presence of a complicated, conflicted emotional response to positive eliciting stimuli diminishes the subjective experience of the positive emotion, causing individuals to label this experience as emotional numbing.<sup>8</sup> Future research should examine this possibility.

Interestingly, no group differences (or group by film interactions) were found in our assessment of displayed emotional expressivity. This finding is consistent with the only other study we know of that assessed this channel of responding among individuals with PTSD (Wagner et al., 2003). Although Litz et al. (2000) found diminished facial EMG to positive stimuli among men in a trauma-primed condition, there are a number of methodological differences between the two studies that make it difficult to reconcile these disparate findings. Demonstrated gender differences in emotional expressivity make it difficult to draw disorder specific conclusions based on these findings (Kring & Gordon, 1998). Also, although facial EMG and visible facial expressivity measure similar constructs, facial EMG can detect prepotent emotional reactions, which may or may not be observable (Cacioppo, Petty, Losch, & Kim, 1986), and the impact of volitional control on the validity of each of these measures is difficult to quantify (Fridlund & Izard, 1983).

One possible explanation for the lack of differences between women with and without PTSD in their facial expressiveness to different emotionally evocative stimuli may be that women with PTSD are successfully inhibiting or suppressing their unique emotional experiences in this one response channel. Although there is some evidence for volitional suppression of emotional expressivity among individuals with PTSD (e.g., Roemer et al., 2001; Wagner et al., 2003), in the current study we did not directly assess this possibility. Previous research examining the

<sup>8</sup>We thank an anonymous reviewer for suggesting this possibility.

consequences of suppression of facial expressivity of emotion suggests that although suppression has limited impact on the subjective experience of emotion, it reduces expressivity and impacts psychophysiological responding, specifically increased sympathetic activation (Gross & Levensen, 1993, 1997). Future studies directed at the interpersonal and psychophysiological consequences of suppression of expressivity among those with PTSD is needed given the research to date on the negative social consequences of expressive suppression (Butler et al., 2003).

Several limitations of this study are noteworthy. First, participants in our PTSD group were female victims of interpersonal assault drawn from the community and self-selected in that they responded to an advertisement that solicited participants for a study focusing on victims of interpersonal violence. While the generalizability of this pattern of findings to a clinical sample is unknown, it should be noted that the PTSD scores of our sample were suggestive of significant symptomatology. The relatively small sample size of this study can also limit generalizability and power of the findings. However, the nonsignificant findings in this study were associated with very small effect sizes suggesting that power was adequate. Nonetheless, future studies on emotional responding and PTSD are needed that use larger and more heterogeneous samples, as well as participants of both sexes.

For the purposes of this study, we chose an "extreme" groups approach to exploring emotional difficulties associated with PTSD in which we compared women with PTSD to those who were reasonably psychologically healthy. However, future research should include a trauma-exposed, non-PTSD group to determine if any evidenced patterns of emotional responding are related to trauma exposure or PTSD. Also, studies using a psychiatric control group are needed to determine if these findings are in fact PTSD-specific.

Clearly, more research is needed examining the severe emotional difficulties reported by those who are diagnosed with PTSD. However, it may be that research into the processes that underlie these deficits may be more fruitful than attempts to observe specific emotional reactions to varying stimuli. There is a growing body of research that demonstrates that individuals with PTSD respond in unique ways to their own emotional experiences that may contribute to the development and maintenance of the disorder and interfere in treatment efforts (e.g., Foa et al., 1995; Jaycox et al., 1998; Nightingale & Williams, 2000; Orsillo & Batten, in press; Plumb et al., 2003; Roemer et al., 2001). Further research into these processes may provide clinically relevant recommendations for the prevention and treatment of PTSD.

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